

Safety Data Sheet

1. Product and company identification

Product name : POTASSIUM HYDROXIDE, SOLUTION 48%
Name of manufacturer : KANTO CHEMICAL CO., INC.
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Name of section : Electronic materials division technical department
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SDS No. : GE00099

2. Summary of danger and Hazard

GHS classification

Physical and chemical hazard

Flammable liquids : Out of category
Pyrophoric liquids : Out of category
Self-heating substances and mixtures : Out of category
Substances and mixtures which, in contact with water, emit flammable gases : Out of category

Human health hazard

Acute toxicity(oral) : Category 4
Skin corrosion/irritation : Category 1B
Serious eye damage/eye irritation : Category 1
Specific target organ systemic toxicity(single exposure) : Category 1
Specific target organ systemic toxicity(repeated exposure) : Category 1
Aspiration hazard : Category 1

Pictogram or symbol



Signal word : Danger
Hazard statement : Harmful if swallowed
Causes severe skin burns and eye damage
Causes serious eye damage
Causes damage to organs (respiratory organs)

Causes damage to organs (respiratory organs) through prolonged or repeated exposure

May be fatal if swallowed and enters airways

Cautions

Safety measurements : Do not breathe dust, mist, and vapor.
Do not eat, drink or smoke when using this product.
Wear appropriate protective gloves, glasses, clothing, face shield, or mask.
Wash protective equipment thoroughly after use.
Wash hands thoroughly after handling.

First-aid measures : If inhaled : Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical treatment if you feel unwell.

If swallowed: Rinse mouth, do not induce vomiting. Immediately get medical treatment.

If in eyes : Rinse cautiously with water for several minutes. Get medical treatment.

If on skin : Remove contaminated clothing and the substance. Immediately get medical treatment.

If exposed, get medical treatment.

Get medical treatment, if you feel unwell.

Storage : Store locked up.

Disposal : Dispose of contents and containers appropriately in accordance with related regulations.

3. Composition/Information on ingredients

Substance/Mixture : Substance

Chemical name or commercial name : Potassium hydroxide

Ingredients and composition : Water solution contains 48% potassium hydroxide

Chemical formula : KOH

CAS No. : 1310-58-3

TSCA Inventory : Registered

EINECS No. : 2151813

Dangerous and hazardous ingredients : Potassium hydroxide

4. First aid measures

Inhalation : Remove the victim to fresh air, and make him blow his nose and gargle.

Skin contact : Wash the affected areas under running water.

Eye contact : Wash the affected areas under running water for at least 15 minutes. Get medical treatment.

Ingestion : Rinse mouth with water. Give the victim one or two glasses of water or milk. Do not induce vomiting. Get medical treatment as soon as possible.

Protection for first aid person

: Rescuers should wear proper protective equipment like rubber gloves, goggles.

5. Fire fighting measures

Extinguishing media : This product is noncombustible.

Prohibited extinguishing media

: None

Particular fire fighting : Move containers from fire area if it can be done without risk, if not possible, apply water from a safe distance to cool and protect surrounding area.

Protection for firefighters

: Firefighters should wear protective equipment.

6. Accidental release measures

Cautions for personnel : Wear proper protective equipment and avoid contact with skin and inhalation of vapor. Conduct operations from upwind and evacuate people downwind. Keep away personnel except for authorized ones from spillage area by stretching ropes.

Cautions for environment : Attention should be given to avoid discharge of spilled product into rivers and resulting environmental damage. When diluting spill with large amounts of water, discharge of untreated wastewater into the environment must be avoided.

Removal measure : Absorb spill with diatomaceous earth or dry sand and place in container. Neutralize residue with dilute acid and then flush with copious amounts of water.

7. Cautions of handling and storage

Handling

Engineering measures : Wear proper protective equipment to avoid contact with skin or inhalation of vapor.

Storage

Adequate storage condition

: Store in a dark, cool place and tightly closed.

Do not store with acid substances.

Safety adequate container materials

: Polyethylene, fluorine resin

8. Exposure control/Personal protection

Engineering measures : Install a local ventilation system in case of vapor, fume or mist condition.

Control parameters

ACGIH(2015) : 2mg/m³(ceiling) (as potassium hydroxide) (TLV-STEL)

Protective equipment

Hands protective equipment

: Impervious protective gloves

Eyes protective equipment

: Safety goggles

Skin and body protective equipment

: Protective clothing, protective boots

9. Physical and chemical properties

Appearance : Liquid
Color : Colorless
Odor : Odorless
pH : Strong alkalinity
Boiling point : 133°C
Melting point : Not available
Flash point : Noncombustible
Density : 1.49g/cm³ (20°C)
Solubility
Solubility in solvents : Water ; Miscible
Other data : Viscosity : 6.7cP(20°C)

10. Stability and reactivity

Stability : Absorbs carbon dioxide in air.
Reactivity : Reacts with acids and generates heat.
The chemical corrodes aluminium, tin, zinc, chromium, and their alloys, releasing explosive hydrogen gas.
Incompatible conditions : Light, heat
Incompatible materials : Acids, metals

11. Toxicological information

Acute toxicity : Harmful if swallowed(category 4)
Dermal : Not possible to classify because of insufficient data.
Inhalation(vapor) : Not possible to classify because of insufficient data.
Inhalation(dust, mist) : Not possible to classify because of insufficient data.
(as Potassium hydroxide)
rat oral LD50=273mg/kg
Skin corrosion/irritation : Causes severe skin burns and eye damage(category 1B)
Potassium hydroxide (solid) is described to be corrosive. Exposure to human skin caused chemical burns (3rd-degree). Battery electrolyte (25% Potassium hydroxide solution) caused tissue corrosion associated with small perforation. In rabbit skin irritation tests, corrosiveness was observed. Thus, it was classified into category 1B.
Serious eye damage/eye irritation : Causes serious eye damage(category 1)
Based on the description that potassium hydroxide causes irreversible damages to human eyes and has corrosivity of rabbit eyes, it was classified as category 1.
Respiratory sensitization or Skin sensitization : Respiratory sensitization : Not possible to classify because of insufficient data.

Skin sensitization : Not possible to classify because of insufficient data.

Skin sensitization studies of potassium hydroxide in guinea pigs gave negative results. Potassium ion (K⁺) and hydroxide ion (OH⁻) exist in living organisms. Thus, it is unlikely that potassium hydroxide causes skin sensitization. However, the classification was not possible because the details of the test are unknown and there is no human data.

Mutagenicity : Not possible to classify because of insufficient data.
The results of in vitro test (Ames test) with potassium hydroxide were negative, but there is no data of in vivo test.

Carcinogenic effects : Not possible to classify because of insufficient data

Effects on the reproductive system

: Not possible to classify because of insufficient data.

Specific target organ systemic toxicity single exposure

: Cause damage to organs (respiratory organs) (category 1)

Potassium hydroxide acts as strong alkali on skin and mucosa, and inhalation exposure to dust or mist may cause upper respiratory tract irritation and tissue damages, leading to nasal septum damage and pulmonary edema. Thus, it was classified into category 1 (respiratory organs).

Specific target organ systemic toxicity repeated exposure

: Causes damage to organs (respiratory organs) through prolonged or repeated exposure(category 1)

Human studies have shown that inhalation of potassium hydroxide (dust, mist) causes upper airway inflammation, which may result in nasal septum ulceration as a chronic effect. However, there is no studies on airborne concentrations and incidence of lesions. Exposure to dust or mist of potassium hydroxide may cause nasal septum lesions and irritation of the eyes and respiratory tract. Although there is not sufficient data, it is clear that potassium hydroxide is alkaline and inhalation causes respiratory inflammation. Thus, potassium hydroxide was classified into category 1 (respiratory organs).

Aspiration hazard : May be fatal if swallowed and enters airways(category 1)

Studies show that in fatal cases of unintentional ingestion of potassium hydroxide, the cause of death involves aspiration into the esophagus to trachea and pneumonia, and aspiration of alkali into airway causes fatal injuries to the larynx, trachea/bronchus, and lung. Thus, it was classified into category 1.

12. Ecological information

Ecotoxicity

Fish toxicity : Acute aquatic toxicity : Not possible to classify because of insufficient data.

Chronic aquatic toxicity : Not possible to classify because of insufficient data.

Persistence and degradability

: Not available

Bioaccumulative potential : Not available

13. Disposal consideration

Residual disposal : Dilute the chemical with a large amount of water and neutralize with dilute acid, then flush in a drain. Or entrust approved waste disposal companies with the disposal.

Containers : In case of disposal of empty bottles, dispose bottles after removing the content thoroughly.

14. Transport information

UN class : Class 8(Corrosive substances) P. G. II

UN number : 1814

Marine regulation information

UN No. : 1814

Proper shipping name : POTASSIUM HYDROXIDE, SOLUTION

Class : 8

Sub risk : -

Packing group : II

Marine pollutant : Not applicable

Aviation regulation information

UN No. : 1814

Proper shipping name : Potassium hydroxide solution

Class : 8

Sub risk : -

Packing group : II

15. Regulatory information

Ensure this material in compliance with federal requirements and ensure conformity to local regulations.

16. Other information

References Handbook of dangerous and hazardous chemicals, Japan Industrial Safety & Health Association. (2000-2001)
Handbook of Dangerous Substances Springer-Verlag Tokyo(1991)
Handbook of 16817 Chemical Products, The Chemical Daily Co. (2017)
Handbook of Poisonous and Deleterious substances, revised and enlarged edition, Yakumu Kohosa(2000)

The information contained herein is based on several references and the present state of our knowledge. However the SDS does not always cover all information about the product, handle the product carefully. The information is intended to ordinary usage, in case of particular handlings, conduct appropriate safety measurements. The information herein is only provision of information, and it does not represent a guarantee the properties of the product. The Safety Data Sheet (SDS) is prepared based on JIS Z7253, and it has the same required elements on the Material Safety Data Sheet (MSDS) which is prepared based on JIS Z7250:2010.